245 artificially through long ducts (see p. 55). Mountainous areas at altitudes of more than 2,400 meters are too cold for bananas [51]; their growth already becomes noticeably sparse beginning at an altitude of 2,000 meters. Only a few bananas grow in the sterile quartzite areas of eastern Urundi.

Most of the fruit of the banana is cut down when it is [252] still green and unripe. The bananas are then peeled and boiled in water to make a kind of porridge, or they are [262] dried in the sun and ground into flour. Ripe fruit is eaten only in small amounts and as a delicacy since it is hard to [273] digest uncooked. For brewing beer, bananas are artificially ripened by fire in holes dug in the ground (see p. 60).

After the bundles of fruit have been cut off, the trunk withers. If necessary, it is cut down and split into small pieces which are spread at the foot of other trunks as [231] vegetable fertilizer. Chopped banana trunks are also used as fodder for young cattle. In dry areas the watery juice is squeezed from the trunks and drunk. The fibers of half-dried trunks are used for making string, rope, and plaited work, and the large dry leaves are used for roofing the huts, for wrapping various objects, etc.

244 Beans (ikiharage), next to bananas the most important means of subsistence of the Barundi, are grown in large fields all over the country. They abound in the higher or drier areas where bananas thrive with difficulty or not at all. Beans still grow quite well at altitudes between 2,000 and 2,500 meters. About 90 varieties are known: bushy, creeping, and climbing types; those which thrive in cold or in warm climates; and those bearing seeds of different size and color. They all belong to the species Phaseolus vulgaris which has probably been brought to the interlacustrine region from the west, together with the sweet potato and corn (No. 28a, p. 222). The creepers grow as tall as a man, and each plant is propped up by a sorghum stalk or a stick to which they can cling in the same manner as our [European] climbing beans. They are planted by sticking two or three beans into small holes made with a hoe.

The same technique is used for peas (uwusassja) of which

244 there are about half a dozen varieties of the type Pisum sativum. One with a bluish fruit is supposed to have been imported by the Batussi from their original home in the lands of the Galla (No. 19, p. 283). Stuhlmann, however, assumes that the pea, which in East Africa is grown only in the highlands of the lake region, was introduced by the Portuguese from the south and spread north across the highlands (No. 28a, p. 225). In the upper mountainous areas of Urundi peas are the only cultivated plant. As on the high volcanoes of Ruanda, on the
[262] peripheral mountains of Lake Kivu, and in the Ruzizi graben, many thousand natives in the high peripheral mountains of northwest and western Urundi, up to an altitude of almost 3,000 meters, live almost exclusively on peas. Wherever the
[311] magnificent, old, virgin forest in these regions up to the watersheds is destroyed by ax and fire, it makes room almost without exception for pea fields. In the rich humus of the forest soil, the peas thrive exceptionally well, of course. As the destruction of the forests proceeds, so does the expansion of pea fields. What a miserable substitute for the wonderful and economically much more valuable forest which in the existing climate could never be restored to its former size, even if this were attempted.

Beans and peas are left to ripen fully on the "stalk." Only when the plants have withered so completely that the fruit is about to fall off by itself are they torn out and piled up in the kraals. Then they are spread out on the roofs of the huts and finally threshed with switches. The straw [52] that is not used for litter is distributed on the fields in numerous single piles, like our haycocks, and then burned so that the ashes will fertilize the soil.

243 Peanuts (itschjoba) and corn (ikigori) are sown in the same
244 manner as beans, by sticking them into holes. The peanuts are first taken out their shells, and the corn kernels are left in water for a day to make them swell. There seem to be three types of peanuts which are differentiated as itschjoba, itschjema, and itschjansa. None of them is used for making oil. They are only
[252] eaten as a dessert and delicacy, either raw or roasted in ashes (No. 19, p. 41).

243 There are at least half a dozen different varieties of corn (ikigori). In regions where the soil can easily be irrigated, corn is often sown three times a year, and relatively large stocks of it are always kept in the granaries. The ears are cut from the stalk. As long as they are still juicy and sweet, they are either [252] eaten raw or roasted in ashes, but for the most part the ripened kernels are ground into flour and made into a kind of polenta [372] [Italian dish]. The straw is used for fuel.

244 Yams (igname), arrowroot (amateke), and sweet potatoes (ikisumbu) are planted by sticking the tubers into the ground, and a little topsoil is heaped over them. Sweet potatoes, of which there are about half a dozen varieties (No. 19, p. 424), and arrowroot need much water for the first period of growth. For this reason they are mostly grown in the valley bottoms where they can be artificially irrigated (Plate 22b). When ripe, they are dug up with a hoe in the same manner as our potatoes; the tubers or rootstocks are removed and cooked or roasted in ashes.

245 Manioc (umumbati), however, is cultivated by shoots which are broken off from the juicy manioc shrubs and then planted in rows with a little topsoil heaped over them. After that the plant grows without any further care. It is the most undemanding of all the cultivated plants of East Africa, and for this reason it is found all over Urundi, especially in the eastern quartzite regions. At least six varieties are distinguished, 252 none of which is so poisonous as to require cooking or fermentation in order to become palatable, as do some other varieties in East Africa. It is eaten raw, cooked, dried, ground up as flour, in the form of dumplings, etc. The leaves are boiled as a vegetable.

243 Sorghum (isakka) plays a much less important role in Urundi than in Ruanda where it ranks first among cultivated plants, even before bananas. Uha, too, produces more sorghum than anything else and supplies the Barundi with it in times of scarcity. Nevertheless, sorghum occurs in Urundi in some twenty named varieties of the white and red types (No. 19, p. 544). When sorghum is sown, the soil is simply turned over with a hoe; in most cases no furrows are drawn. The grains

243 are then scattered from the swinging hand onto the level ground, after which some soil is sprinkled on the seed by hand. Eleusine (uwuro) is sown in the same manner. The ripe ears of these two types of millet are each individually cut from the stalks with a knife. This is also the method used for corn and rice. Then the ears are spread on the firm ground in front of the huts and threshed with switches. Some of the sorghum [252] is ground into flour, but most of it is used for brewing beer. [273] Eleusine is mainly ground into flour from which the daily ugali mush (umudsima) is made.

The Barundi grow tobacco (itabi) in small quantities near 247 almost every homestead, as has been mentioned above. The delicate plant is cared for so poorly, however, that it yields a mediocre product. Uvira tobacco, which is traded in considerable amounts in the Tanganyika area, is of much better quality. [53] The Barundi put the tobacco seeds into small holes dug into the soil with a hoe. The young seedlings are not transplanted, but the Barundi clear and irrigate the surrounding soil from time to time. As soon as the plant begins to blossom (red, not white), the leaves are picked off and strung up on bast strings to dry in the sun. Then, for fermentation and storage, they are wrapped in dry banana leaves. In spite of its terrible appearance, 276 the tobacco does not have a bad aroma, but it is so strong that even the Barundi seldom smoke it. In most cases it is smoked only by old men and women. The others are all inveterate snuff-takers (see p. 57), whereas in Ruanda tobacco is only rarely taken as snuff but is smoked in considerable amounts.

Tobacco is regarded by the Barundi in the same way as all [824] narcotics are regarded by primitive peoples: as possessing [758] mysterious powers. From this originates the custom of stuffing a pinch of snuff up the nose of a person who has fainted. Also, the young bridegroom blows tobacco smoke at his wife, and so forth (No. 19, p. 557).

●244 Several kinds of pumpkins (imboga) are likewise grown merely as garden produce or interspersed among bananas or sorghum, in particular a variety which is round and as big as a head, and another smaller variety that looks almost like a

244 cucumber. They are eaten as a vegetable. Gourds with
[415] variously-shaped fruits are cultivated mainly for use as vessels.

The oil palm (ingasi), which occurs in Urundi only in
314 the interlacustrine area, is not really a plant cultivated by the
[177] Barundi but a wild tree which has been introduced from West Africa. The Barundi use its fruit. The oil palm forest of Mtara is approximately 12 kilometers north of Usumbura. It covers about 800 hectares with 400,000 to 500,000 oil palms (Elaeis guineensis). Closer to Usumbura there is a forest of 200,000 to 220,000 palms, and farther south of Usumbura, stretching to the vicinity of Ujiji, there are other stocks of trees with 300,000 to 400,000 palms. The systematic cultivation of oil
[177] palms was first introduced to the Tanganyika area by the Europeans, but at the present time the forests are exploited neither by Europeans nor by the natives because they are the chief breeding site of the fly that transmits sleeping sickness. For this reason the forests are avoided as much as possible. The
[248] only tree incorporated into their hoe-culture, which is inimical to the cultivation of trees, is the fig from whose bark cloth can be made (see above, pp.24.31). This tree is really planted and cared for. The oil palm, however, is only seldom planted by the natives. After dropping from the trees, the nuts thrive easily in the moist soil where oil palm forests usually grow. The majority of the young trees are either pulled up or cut down, and only a few are left standing to replace old dead trees. After cutting down the ripe fruits of the oil palm, they are first scalded in boiling water and then pounded in a mortar until the whole outer layer of flesh containing the oil is detached. The pounded pap is squeezed out by hand into a wooden tub filled with water so that the oil will float on the surface. From there it is scooped into an earthen pot. It is marketed in smaller pots. Most of it
[439] is sold in Ujiji and in the Congo district (Uvira). The Barundi use
[252] the little oil that is left as an ingredient in some of their dishes or
[278] for frying fish, partly also as a skin lotion and as a medicine for the wounds caused by sand fleas (No. 19, p. 291 and 411).
000 Originally the Barundi were not familiar with the use of palm oil

243 311 The millet fields lie chiefly on the slopes of the hills. They are hoed and seeded after the first rain. Some time later they are weeded. The main harvest takes place in the middle of the dry season. I saw a harvest in Kissaka during the latter half of July. In Nduga it was already over in August. In Mulera the harvest is said to be at the end of February and in Bgisha at the end of November and the beginning of December.

244 311 Sweet potatoes are planted in marshy lowlands and irrigated fields. They are the staple during the dry season when other supplies are exhausted and the millet is not yet ripe.

The land at the highest altitude is used for peas, although one often finds fields of peas at a lower altitude than banana groves. The highest fields I saw were on Mount Ndisa, high above the settlements, probably extending up to 2,000 meters. I could not discover the reason for the high location of these fields. [139] To judge from the surrounding country, I did not have the impression that it was so densely populated that the people were forced to lay out their fields so inconveniently. Peas and beans are harvested at the end of the rainy season.

251 Field crops, with the exception of bananas and sweet potatoes, are kept in storehouses (kigega). Millet is cut off short and left lying unthreshed until it is needed. Only then is it threshed in small quantities in mortars and winnowed by the wind on large woven shields. Bananas and sweet potatoes are brought from the plantations as needed. The bunches to be used for making beer are kept in the huts to continue ripening. Here considerable stores of other crops, especially beans and peas, are kept in large baskets (umuhiri) made air tight with cow dung.

314 Forestry. In Ruanda we can hardly speak of forest cultivation, despite intensive farming and the widespread cultivation of the land in densely populated areas where forests have shrunk to a minimum. The Muhutu is the worst enemy of the forest. He uses wood to build his huts and storehouses, his boats and tools, and to cook his food, but he does not husband it, and in this respect he is no better than the peasant of eastern Europe.

311 According to unanimous reports by the natives, the country of Ruanda is undergoing a rapid change, and deforestation is making great advances. Formerly the country is said to have been covered